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THE AMERICAN NATURALIST.

VOL. XVI. — *APRIL*, 1882. — No. 4.

MOUND PIPES.

BY EDWIN A. BARBER.

IT is impossible to determine what was the earliest form of the tobacco-pipe. The oldest examples of which we possess any knowledge, have been exhumed from some of the mounds of the Mississippi valley. These are usually made of stone of great hardness, but we have no reason to believe that this material was always employed in their manufacture. It is not to be supposed that the symmetrical and highly-finished specimens which the mounds have produced were the results of the first savage conception of the narcotic utensil. Indeed, it is more than probable that the most ancient pipes were rudely fashioned from wood or other perishable substances, all traces of which have long since disappeared.

The earliest stone pipes from the mounds were "always carved from a single piece, and consist of a flat curved base, of variable length and width, with the bowl rising from the center of the convex side. From one of the ends, and communicating with the hollow of the bowl, is drilled a small hole, which answers the purpose of a tube; the corresponding opposite division being left for the manifest purpose of holding the implement to the mouth."¹ It would be difficult to conceive of any other form so admirably adapted to the purpose for which it was designed. Such pipes are not only models of compactness, but are, in many instances, highly ornamental, and in all probability totemic. In the majority of these "platform" pipes, the stem perforation, which is always straight, is so minute as to preclude the possibility of the insertion of an additional stem. The

¹ Ancient Monuments of the Mississippi valley, p. 228.

implement was complete in one piece, so that all parts were equally durable. The facts that such pipes had expended upon them all of the ingenuity and skill at the command of the sculptor, and that they were usually placed in association with human remains, go far to prove that they were invested, to a considerable degree, with a religious, or at least a mortuary, significance. "The remarkable characteristics of their elaborately sculptured pipes, and their obvious connection with services accompanying some of the rites of sacrifice or cremation, tend," as Dr. Wilson observes, "to suggest very different associations with the pipe of those ancient centuries from such as now pertain to its familiar descendant. Embodying, as these highly-finished implements did, the result of so much labor, as well as of artistic skill, there are not wanting highly suggestive reasons for the opinion, that the elaborate employment of the imitative arts on the pipe-heads found deposited in the mounds, may indicate their having played an important part in the religious solemnities of the ancient race."

The typical mound pipe is of the "*monitor*" form, as it may be termed, possessing a short, cylindrical, urn, or spool-shaped bowl, rising from the center of a flat and slightly curved base. Fig. 1 is an illustration of an example from a mound in Ross county, Ohio, which is now deposited in the National Museum at Washington. Pipes of this form average three or four inches in length, but an extraordinary specimen formerly in the collection of Mr. O. A. Jenison, of Lansing, Mich., measures six and five-eighths inches.

The most important and interesting discovery of mound pipes was made by Messrs. Squier and Davis, during their explorations in the valley of the Mississippi, about a third of a century ago. From a small sacrificial tumulus in the vicinity of "Mound City," Ohio, they obtained nearly two hundred stone pipes. Many of these, according to the report of the discoverers, "were much broken up, some of them calcined by the heat, which had been sufficiently strong to melt copper, masses of which were found fused together in the center of the basin. A large number have nevertheless been restored, at the expense of much labor and no small amount of patience. They are mostly composed of a red porphyritic stone, somewhat resembling the pipe stone of the *Coteau des Prairies* excepting that it is of great hardness and interspersed with small variously colored granules. * * * *

The bowls of most of the pipes are carved in miniature figures of animals, birds, reptiles, etc. All of them are executed with strict fidelity to nature, and with exquisite skill.”¹ With the exception of this large deposit of these objects, comparatively few of them have been brought to light; yet a number of them are scattered through public and private museums in the United States and Europe, some of which will be described hereafter. It is a matter for sincere regret that the greater portion of the original collection of Dr. E. H. Davis was sold to the Blackmore Museum at Salisbury, England, some years ago. In the Museum of Natural History in New York City, however, thirteen of the original specimens, formerly owned by Mr. E. G. Squier, may yet be seen, including the remarkable example represented in Fig. 142 on page 244 of *Ancient Monuments*. In the magnificent collection of pipes recently owned by Mr. William Bragge, F.S.A., of Birmingham, England, are three broken bird-shaped pipes from “Mound City,” Ohio. A set of casts of the entire Squier and Davis collection is preserved in the National Museum at Washington. Amongst the pipes of the original series were a number supposed to represent animals not indigenous to the United States. Seven representations of the lamantin, or sea-cow, were found in the mounds, three of which were nearly perfect. “The sculptures of the manatus,” remark the explorers, “are too exact to have been the production of those who were not well acquainted with the animal and its habits.”² Though frequenting the mouths of tropical rivers, the “big beaver,” as the Florida Indians called this curious animal, has been found within the boundaries of the United States. Bartram states that it occurs in Florida, in a spring a few miles below Tallahassee.³ The manati are comprised in three or four species, two of which are found in the Gulf of Mexico. The more northern species (*Manatus latirostris*) is found in 25° N. lat., and Harlan states that during the first quarter of the present century it was so abundant near the capes of Eastern Florida that one Indian sometimes captured ten or twelve specimens with a harpoon in a single season.⁴ This species, which sometimes attains to a length of fifteen or twenty feet, bears a striking resemblance to the smaller *M. senegalensis* of

¹ Ancient Monuments, p. 152.

² Ibid, p. 254.

³ Travels in North America, Dublin, 1793, p. 229.

⁴ Fauna Americana, 1825, p. 277.

Western Africa. In both of these species the caudal fin is rounded, and the fingers on the swimming paws of the former species are provided with rudimentary nails. The Indians were extravagantly fond of the flesh of the manatee, the tail being considered the most savory portion. The following quaint description of the species inhabiting the Indian ocean is interesting as given by an early writer: "It is good Meat, because using the Shoar it hath a flesh taste, resembling Veal, which also it shews like; the Face is like a shrivelled Buffalo or Cow, the Eyes are small and round, and has hard Gums instead of Teeth; the Intrals also are like a Cow's: there is a Stone generated in the Head, which is very valuable, being a sovereign remedy (as some report) against Cholick, Stone-Cholick, and Dysentery, being beat small, infused in Wine, and drunk fasting: the Body of this Fish is three Yards long and one broad, thick-skinned, and without Scales, narrow towards the Tail, which is very nervous, slow in swimming, because it wants Fins, in lieu of which it has two Paps, which it can use either to suckle its young withal, or creep ashoar, where it grazes, and where it delights to lie and sleep; for it can't keep half an Hour under Water. It is very teachable and apt to be made tame, being famed like the Lizzard for their love to Man, whose Face they delight to look upon, and in weakness have refreshed them."¹

One of the sculptures referred to above, is represented with a flat, truncated tail, which may possibly have been intended for the South American species (*M. australis*), though it is not probable that the ancient mound-builder was familiar with exotic models of this animal. I am inclined to believe that this feature was the result of an inaccuracy in detail on the part of the sculptor, especially as all of the other representations exhibit the rounded tail of the Floridian species.

Another carving of ruder execution has, with some hesitation, been described as the toucan, a bird not found in the northern part of the western continent. Since the Indians of Guiana and Brazil, according to the statements of travelers, formerly domesticated this bird, the fact that the sculpture in question is represented in the act of taking food from a human hand, "would favor the conclusion," according to the discoverers, that it was

¹ Sir Thomas Herbert's Travels in 1626. From Navigantium atque Itinerarium Bibliotheca, by John Harris, F.R.S. London, 1705, Vol. I, p. 408.

intended to represent the toucan: The shape and proportions of the beak and the number and position of the toes, however, are sufficient evidence that the bird which formed the model of the artist, did not belong to the zygodactylous order. The pipe shows three toes in front and the bill is short and stout. The builders of the mounds probably possessed their aviaries which, like those of the ancient Mexicans, doubtless supplied a number of species which were capable of domestication.

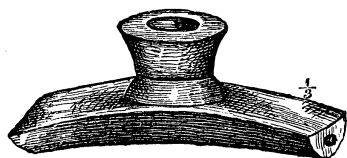


FIG. 1.—Monitor Pipe.

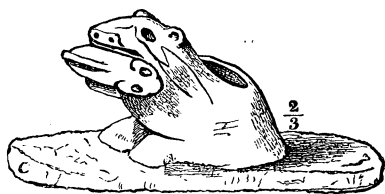


FIG. 2.—Otter Pipe.

Several of the images, however, are undoubtedly portraiture of familiar animals. "Not only are the features of the various animals represented faithfully, but their peculiarities and habits are in some degree exhibited."¹ In one pipe we recognize the otter with a fish in his mouth (Fig. 2). The tufted heron is seen in the position of devouring a fish (Fig. 3). "Nothing can surpass the truthfulness and delicacy of the sculpture. The minutest feathers are shown; the articulations of the legs of the bird, as

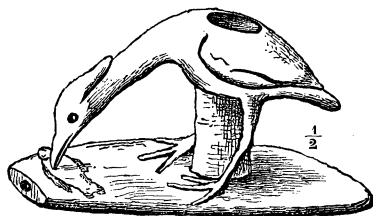


FIG. 3.—Heron Pipe.

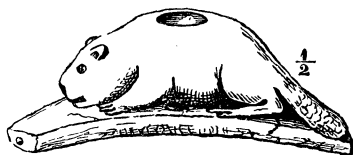


FIG. 4.—Beaver Pipe.

also the gills, fins and scales of the fish, are represented."² The hawk is shown in the act of tearing a smaller bird.³ The beaver also figures in the collection (Fig. 4), as also do the bear, panther, wolf, wild-cat, elk, opossum and squirrel; the buzzard, crow, eagle, falcon, owl, raven, duck, grouse, parrot and swallow; the serpent (rattlesnake), turtle, frog, toad and a number of other animals which have been readily recognized. The sockets of the

¹ Ancient Monuments, p. 152.

² Ibid, p. 259.

³ For illustration of this sculpture, see *Harper's Monthly Magazine*, June, 1855.

eyes in the majority of the bird pipes were set with pearls from the margaritiferous *Unionidæ*.

The most valuable specimens of the series, however, are those in the form of the human head, probably "faithfully representing the prominent physical features of the ancient people by whom they were made."¹ Fig. 5 illustrates the most interesting example in this valuable collection.²

Next in importance to the discoveries of Messrs. Squier and Davis, is the collection of mound pipes deposited in the Davenport Academy of Natural Sciences, and for the greater part taken from mounds by members of that learned body. The series number forty-three specimens of the platform type, consisting of twenty-two with plain or zoned bowls of the "monitor" pattern; one human head; seven birds, and thirteen other animal forms, of which Mr. W. H. Pratt has kindly sent me photographs.



FIG. 5.—Pipe from Squier and Davis collection.

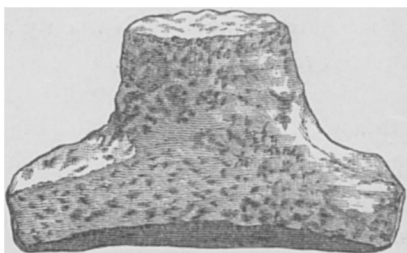


FIG. 6.—Unfinished Pipe.

An interesting and instructive specimen, in the form of an unfinished pipe, was taken from a mound at Toolsborough, Louisa county, Iowa, which serves to show, to a certain extent, the manner of fashioning such objects. The material is a coarse, soft, cream-colored stone, which has been roughly hewn into the desired shape (Fig. 6). The inference to be drawn from the presence of an incomplete pipe in one of the mounds, is either that it was discarded on account of the unsuitableness of the material, or that it was placed in the tumulus as a substitute for a perfectly finished specimen which could not be procured at the time when the body it was intended to accompany was deposited. An

¹ Ancient Monuments, p. 153.

² The illustration of this pipe and those which precede, have been furnished through the courtesy of Professor S. F. Baird, secretary of the Smithsonian Institution, from Dr. Charles Rau's work on the Archæological Collection of the United States National Museum.

incomplete object, somewhat resembling this, in which the cavity of the bowl is merely indicated, is figured in Mr. E. G. Squier's "Aboriginal Monuments of the State of New York."¹ It is made of steatite and was found near Mount Morris, Livingston county. The original of Fig. 7 is a bird-shaped pipe carved from

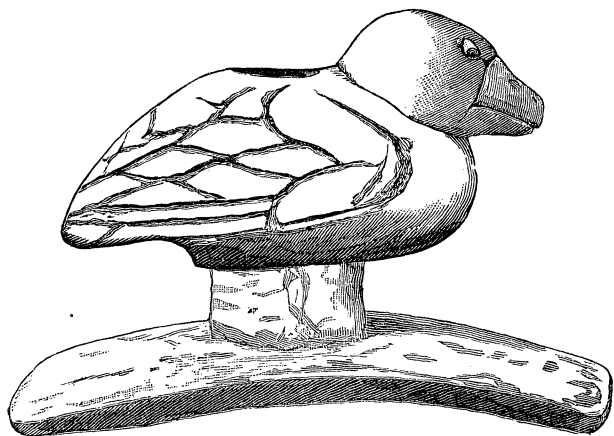


FIG. 7.—Bird Pipe.

a bluish-gray pipe stone. It was found associated with portions of several human skeletons and a four-sided, bent copper "awl," about six inches in length, in a mound of the same group as the last one figured. This was possibly intended to represent a spe-

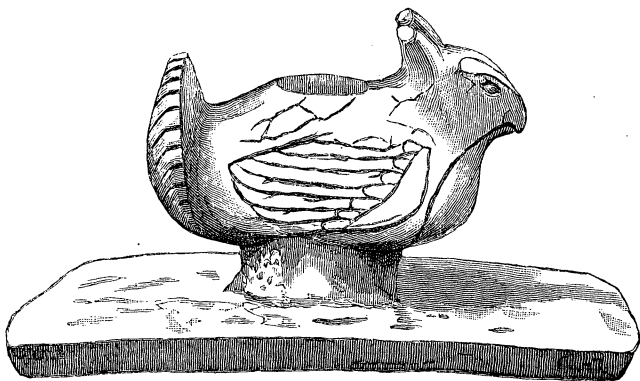


FIG. 8.—Grouse Pipe.

cies of wild duck, the eyes of which were globules of pure native copper. From another mound of the same group was taken a second bird pipe of the same material, which is shown in Fig. 8,

¹ Smith. Cont. to Knowl. Vol. II, p. 76 (Fig. 12).

and is believed to portray the male of the pinnated grouse. In the same mound were found portions of several human skeletons, about two hundred shell beads, five copper axes, one of them "a very smoothly wrought specimen, showing very distinct traces of the cloth in which it had been wrapped, and some portions of which were still adhering to the copper,"¹ and another bird-shaped

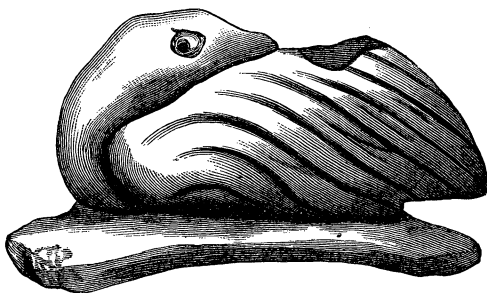


FIG. 9.—Goose (?) Pipe.

pipe of *red pipe stone*, furnished with eyes of pearl. The specimen shown in Fig. 9 may have been meant for the wild goose, or possibly the loon. It is formed of sandstone, and was found in Louisa county, Iowa.

About one mile below Davenport, on the right bank of the Mississippi, the original of Fig. 10, fashioned from a light-gray pipe stone, was discovered in a mound at a depth of six feet,

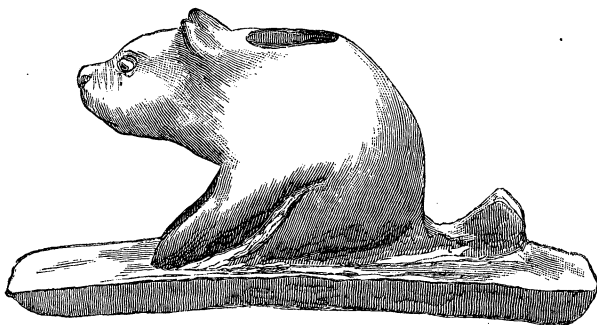


FIG. 10.—Ground Hog Pipe.

associated with five very old copper, cloth-wrapped axes and two pieces of galena. Above these objects, one and a half feet from the top of the mound, were found two adult skeletons, evidently belonging to an intrusive burial, as they were accompanied by

¹ Vide Proceedings of the Davenport Academy, Vol. I, p. 108.

European relics, such as glass beads, etc. It is difficult to determine what animal was intended, the wolf, ground-hog and prairie-



FIG. 11.—Howling Wolf (?) Pipe.

dog having been variously suggested. The “howling wolf” (?) pipe (Fig. 11) is from a sand hill in Rock Island county, Illinois.

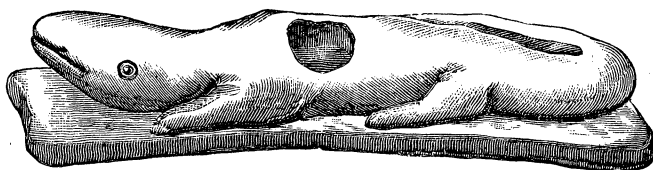


FIG. 12.—Lizard Pipe.

The sculptured lizard (Fig. 12) and the turtle (Fig. 13) are from mounds in Mercer county, Ill. The last three are made of a

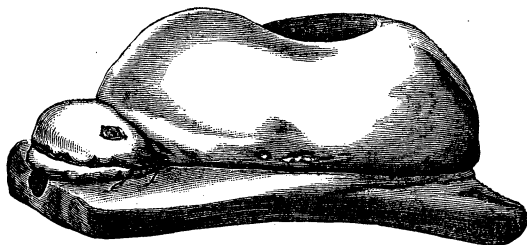


FIG. 13.—Turtle Pipe.

soft, dark slate-colored talc. The serpent pipe (Fig. 14) comes from the same locality, and is formed of a sort of clay slate. In close contiguity, in the same mound, a lump of galena, considerably ground down, was discovered, and the pipe presented the

appearance, when found, of having been lightly coated with a plumbiferous substance. Another example carved in the form of

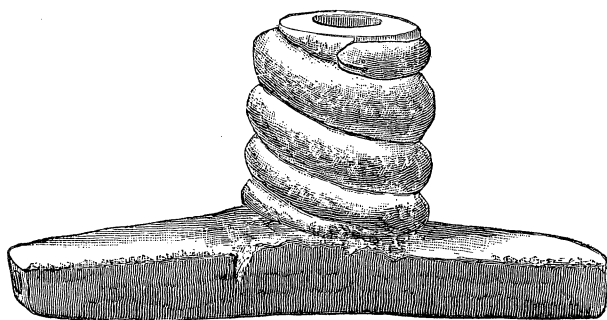


FIG. 14.—Serpent Pipe.

a frog (Fig. 15) from a light-gray pipe stone, was exhumed from a mound in the same group with that which yielded the original of Fig. 10. Associated with the former were two copper axes and five skeletons, of which three faced the east and the others the west. The pipe was found with the latter two.

Having incidentally heard of a pipe in the form of a bear, which was said to have been found in a mound in Muscatine county, Iowa, by a laboring man, the Rev. Mr. J. Gass, a member of the Academy, finally, with some difficulty, discovered the

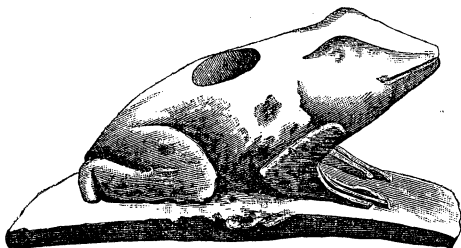


FIG. 15.—Frog Pipe.

owner and succeeded in purchasing the specimen from him for a paltry sum (see Fig. 16). The peculiarity of this pipe, which is made of a gray trap rock, unpolished, is that, unlike most other platform pipes, it possesses a *straight* base which is not drilled and of which the front projection is lacking, the mouth of the animal forming the mouth-piece for the smoker.

The most remarkable specimens in the Davenport collection, however, are the two elephant pipes recently brought to light, and which have been too hastily pronounced spurious by critics

who have had no opportunity of examining them. The circumstances of the discovery of these two examples are contained in the following extracts from a letter which I have received from

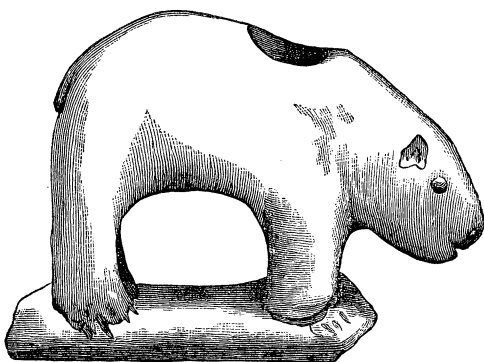


FIG. 16.—Bear Pipe.

Mr. W. H. Pratt, president of the Academy, under date of April 24, 1880: "The first elephant pipe which we obtained (Fig. 17) a little more than a year ago, was found some six years before by an illiterate German farmer named Peter Mare, while planting corn on a farm in the mound region, Louisa county, Iowa. He did not care whether it was elephant or kangaroo; to him it was a curious 'Indian stone,' and nothing more, and he kept it and smoked it.

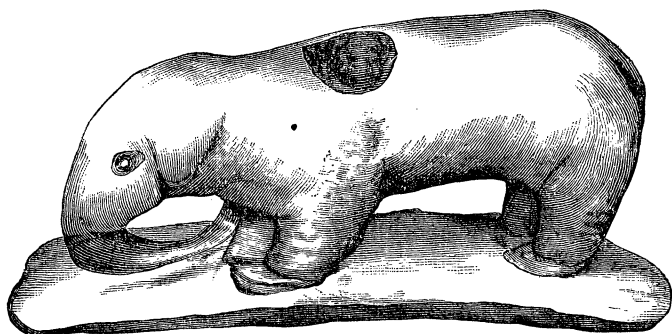


FIG. 17.—Elephant Pipe, Iowa.

In 1878 he removed to Kansas, and when he left, he gave the pipe to his brother-in-law, a farm laborer, who also smoked it. Mr. Gass happened to hear of it, as he is always inquiring about such things, hunted up the man and borrowed the pipe to take photographs and casts from it. He could not buy it. The man said his brother-in-law gave it to him and it was a curious thing—

he wanted to keep it. We were, however, unfortunate, or fortunate, enough to break it; that spoiled it for him and that was his chance to make some money out of it. He could have claimed any amount, and we would, as in duty bound, have raised it for him, but he was satisfied with three or four dollars. During the first week in April, this month, Rev. Ad. Blumer, another German Lutheran minister, now of Genesee, Illinois, having formerly resided in Louisa county, went down there in company with Mr. Gass to open a few mounds, Mr. Blumer being well acquainted there. They carefully explored ten of them, and found nothing but ashes and decayed bones in any, except one. In that one was a layer of red, hard-burned clay, about five feet across and thirteen inches in thickness at the center, which rested upon a bed of ashes one foot in depth in the middle, the ashes

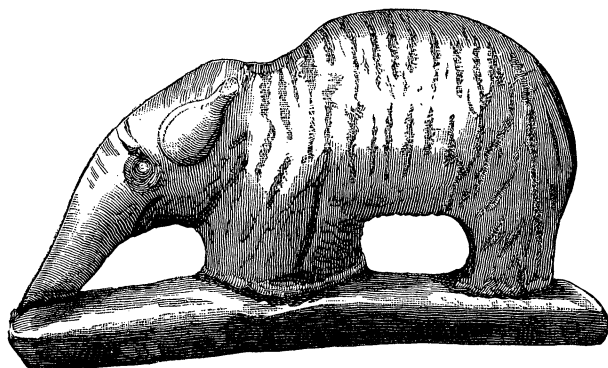


FIG. 18.—Elephant Pipe, Iowa.

resting upon the natural undisturbed clay. In the ashes, near the bottom of the layer, they found a part of a broken carved stone pipe representing some bird; a very small, beautifully formed copper 'axe,' and this last elephant pipe (Fig. 18). This pipe was first discovered by Mr. Blumer, and by him, at our earnest solicitation, turned over to the Academy."

Mr. J. Duncan Putnam, corresponding secretary of the Academy, writes me that the former pipe "is of a light-colored sandstone, but has been much greased and smoked, so as to appear of a dark color." The material of the latter is the same. There seems to be no flaw in the history of these pipes, which, coming from sources of unquestioned integrity, is evidence that there has been no attempt at deception on the part of the Davenport Academy.

It is not within the province of this paper to discuss the question of the contemporaneousness of man and the mastodon in the western hemisphere. The existence of an artificial mound in Wisconsin, 135 feet in length, *in the form of an elephant*,¹ adds much to the probability of the genuineness of the pipes above described. It is worthy of note, however, that no representations of the male elephant have as yet been found amongst the remains of man in North America. It is, to say the least, a singular fact that the most characteristic features of this pachyderm, the prominent tusks, should have been omitted both in the pipe sculptures and the "big elephant mound," if the ancient Americans were acquainted with the model. The long, slender, curved tusks, however, would be difficult to imitate either in the miniature stone sculptures or the embankments of earth, and might have been purposely ignored. These likenesses of fossil mammals acquire an additional interest, however, when we read the remarkable accounts of the discoveries in the State of Missouri and elsewhere, of deposits of bones of the mastodon in association with flint arrow-heads and fragments of pottery.² "Such contiguity of the works of man with those extinct diluvial giants," observes Dr. Wilson, "warns us at least to be on our guard against any supercilious rejection of indications of man's ancient presence in the New World as well as the Old. * * * * Whether or not those huge mammals had been known to man, during his occupation of the American continent, as his living contemporaries, their remains were objects of sufficiently striking magnitude to awaken the curiosity even of the unimpressible Indian; and traditions were common among the aborigines of the forest relative to the existence and destruction of the strange monster, whose bones lie scattered over the continent from Canada to the Gulf of Mexico. * * * * In all that relates to the history of man in the new world, we have ever to reserve ourselves for further truths."³

Pipes of the platform type are confined almost exclusively to the section north of the Ohio and Missouri rivers, or to the States of Ohio, Indiana, Illinois and Iowa. A few specimens of the curved-base form have been picked up in other localities, but

¹ Vide Smith. Report, 1872, p. 416. The Big Elephant Mound in Grant county, Wisconsin, by Jared Warner.

² See Foster's Prehistoric Races of the U. S., p. 63.

³ Prehistoric Man, London, 1862, Vol. I, p. 112, et seq.

generally, so far as I can ascertain, on the surface, having in all probability been carried from the mound region by roving bands of Indians of a more recent period. In the National Museum at Washington, are three examples, which were derived respectively from Ohio, Maryland and Illinois. Another was discovered in the valley of the Delaware river in the State of New Jersey. It is of the plain "monitor" form, made of a light-brown or chocolate-colored stone, and is now owned by Mr. Wm. S. Vaux, of Philadelphia, Pa. Hon. R. S. Robertson, of Fort Wayne, Indiana, possesses a pipe of the same form, from a mound in Laport county of the same State, which was found in connection with a copper chisel, two copper needles, four flints, some fragments of pottery and a single skeleton. Two other pipes from Southern Ohio, in the same collection, are cylindrical bowls which have been broken from the curved platforms and put to further use by drilling stem-holes in the sides. One of these shows an opening in the base where it was broken from the stem, the hole being plugged to render it serviceable. The other example has a portion of the platform still attached, which has been smoothed or polished at the point of fracture. In the collection of Dr. C. S. Arthur, of Portland, Ind., are also three curved base pipes with plain bowls, two of which were ploughed up, and the third taken from a mound, in that State.

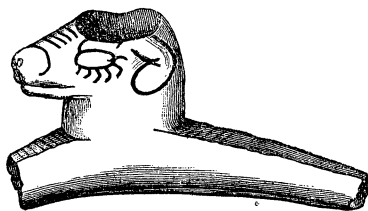


FIG. 19.—"Dog" (?) Pipe.

In a mound at Prairie du Chien, Wisconsin, associated with pieces of mica, an interesting platform pipe was discovered. Hon. Horace Beach, who sends me the original, regards it as decidedly Egyptian in general appearance, and terms it the "dog (?) pipe." It represents the head of some animal, possibly the mountain sheep or goat, and is made of a soft, heavy, dark-brown stone, somewhat resembling Catlinite. The peculiarity of this specimen is that the face looks away from the smoker. As may be seen in the illustration (Fig. 19); the anterior end of the plat-

form, constituting the handle, is wanting. On the upper part of the nose, and on the base, front and back of the neck, hieroglyphical lines are inscribed, which may have possessed some symbolical significance, or perhaps were simply ornamental. In a few examples of pipes of this class, the *platforms* have been carved in imitation of animals. Dr. J. Schneck, of Mount Carmel, Illinois, sends me a sketch of a curious specimen which was found about two feet below the surface of the earth in a mound in Wabash county, Ill. (Fig. 20). It represents a small bird about the size of, and somewhat resembling, the chimney swallow (*Chaetura pelagica* Steph.), which, in those distant days, attached its nest, doubtless, to the cliffs and rocky crags. The material is a soft, yellow slate; the bird is represented on its back with wings crossed beneath, the cylindrical bowl rising from the breast, and the smoking orifice passing through the tail. Dr. Elliott Coues,

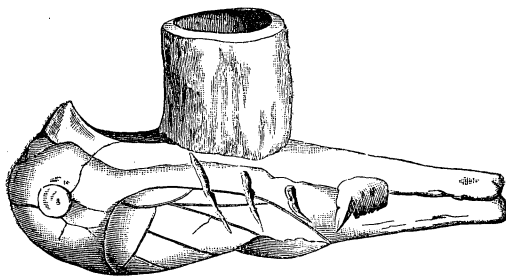


FIG. 20.—Bird Pipe, Illinois.

to whom I sent a sketch of this pipe, writes: "As is so frequently the probable case in such matters, I am inclined to think the sculptor had no particular bird in mind in executing his rude carving. It is not necessary, or indeed permissible, to suppose that particular species were always intended to be represented. Not unfrequently, the likeness of some marked bird is so good as to be unmistakable, but the reverse is oftener the case; and in the present instance I can make no more of the carving than you have done; excepting that if any particular species may have been in the carver's mind, his execution does not suffice for its determination."

Another specimen, in the collection of Mr. N. V. Johnson, of Brookville, Indiana, was found in a marsh a few miles north of that place. The material is a bluish-green stone, very hard and highly polished. Mr. Edgar R. Quick, who sends me a well-

executed colored drawing of this object, writes: "The general form of this beautiful piece of work is that of a crescent with a protuberance on the outside, which forms the bowl of the pipe. The horns of the crescent form respectively the handle and stem or mouthpiece. The handle or front part is beautifully carved in the semblance of a lizard's head." (Fig. 21.)

Although many of the miniature sculptures already described are characterized by a remarkable accuracy of detail, and are faithful representations of well-known animals, the ancient artist was not always true to nature. In some of the carvings, prominent or characteristic features were often exaggerated; the heads of birds and mammals were sometimes disproportionately enlarged; in some instances to such an extent as to suggest to us the idea of caricature. Many of these sculptures were evidently

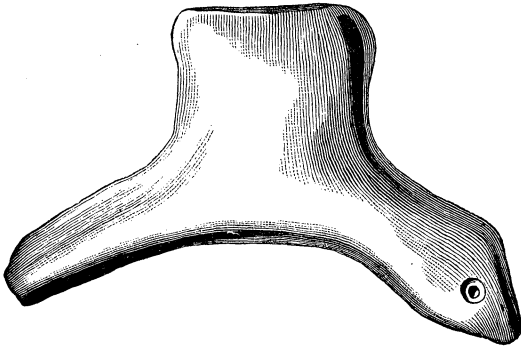


FIG. 21.—Bird Pipe, Indiana.

carved from memory, and errors of execution appear more frequently in the representations of those animals which obviously could not have been perfectly familiar to the sculptor. Indeed, many of these portraiture are scarcely recognizable, and it is often impossible to determine what animal the artist intended to copy. The body of the elephant pipe (Fig. 17) is much elongated and the legs shortened; defects which may be attributed to the inexperience of the workman or his lack of personal knowledge of the model; yet, notwithstanding the fact that certain archæologists have advanced the opinions respectively, that the peccary, the tapir and *the armadillo* were intended to be portrayed, a careful study of the image will confirm us in the belief that the elephant was the animal which the prehistoric artisan had before his mind. It may be asserted with a considerable degree of con-

fidence that no representative of an exclusively exotic fauna figured in the pipe-sculptures of the mound-builders. If we accept the presence of the mammoth or mastodon amongst these carvings, the species which served as models, though now extinct, must be classed with our indigenous fauna. Their knowledge of such animals as the parroquet, the manatus, and possibly the seal and Rocky mountain sheep, does not necessarily indicate any particular migration on the part of that ancient people, but serves to show that their intercourse and commercial relations with other peoples were extensive. As has been previously remarked, however, the artists were apparently well acquainted with some of the birds, mammals and amphibia whose geographical limits were far removed from the upper portion of the Mississippi valley, but which, nevertheless, might have been met with by some of the people in their expeditions. On the other hand, many of the representations were evidently executed from descriptions or rude delineations furnished by those who had seen the originals. The mounds have produced galena from Missouri and the adjacent territory; mica from the spurs of the Alleghany or Rocky mountains; Catlinite from Minnesota; copper from the Lake Superior region; obsidian from Mexico and the Pacific slope of the United States, and marine shells from the Gulf of Mexico, the Atlantic ocean, and also the Dentalium of the Pacific coast.¹ Thus it will be seen that the trade relations of the mound-builders extended over a great extent of territory, in fact, covering the greater portion of the present United States and probably penetrating into British America and Mexico.

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ON THE FLOWERS OF SOLANUM ROSTRATUM AND CASSIA CHAMÆCRISTA.²

BY PROFESSOR J. E. TODD.

WITHIN a few years, a plant has been introduced into South-western Iowa, which is as unwelcome as it is interesting. It bristles all over on stem, leaves and fruit, with stout, rigid prickles. It is commonly called Texas nettle, as it is supposed to have been brought by the herds of Texas cattle, which in

¹ Vide Ancient Aboriginal Trade in North America, by Dr. Chas. Rau. Smith. Rep., 1872, p. 383.

² Read before the Biological Society of Washington, March, 1881.